

Appl. No. 10/657,961
Amdt. Dated Feb. 3, 2005
Reply to Office Action of Nov. 3, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A planar surface illuminator for use beneath ~~below~~ a liquid crystal display panel, comprising:

a light guide plate comprising an optical input surface;

a plurality of point light sources positioned to a side of the light guide plate; and

a number of scattering ~~dot-patterns~~ dots positioned on and integrated with the optical input surface, wherein a group of at least three scattering ~~dot-patterns~~ dots, one group for each one point light source, is present for converting ~~Gauss~~ Gaussian beams emitted by ~~from~~ the point light sources to light beams having a uniform light intensity across their widths, for transmitting through the optical input surface into the light guide plate.

Claim 2 (currently amended): The planar surface illuminator as described in claim 1, wherein the scattering ~~dot-patterns~~ dots protrude outwardly from the optical input surface, and have a hemispherical shape or a ~~tetrahedron~~ tetrahedral shape.

Claim 3 (currently amended): The planar surface illuminator as described in claim 2, wherein all the scattering ~~dot-patterns~~ dots have a same size.

Claim 4 (currently amended): The planar surface illuminator as described in claim 2, wherein a size distribution of scattering ~~dot-pattern~~ dots in each group of at least three scattering ~~dot-patterns~~ dots is complementary with an optical energy distribution of a ~~Gauss~~ Gaussian beam of the corresponding one point light source.

Claim 5 (currently amended): The planar surface illuminator as described in claim

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4, wherein among the group of at least three scattering ~~dot-patterns~~ dots, the nearer a given scattering ~~dot-pattern~~ dot is to its corresponding one point light source, the smaller ~~will be~~ the size of the scattering ~~dot-pattern~~ dot.

Claim 6 (currently amended): The planar surface illuminator as described in claim 1, wherein the scattering ~~dot-patterns~~ dots are formed as concave ~~surface~~ surfaces in the optical input surface, and said ~~surface~~ surfaces are hemispherical or ~~tetrahedron~~ tetrahedral in shape.

Claim 7 (currently amended): The planar surface illuminator as described in claim 6, wherein all the scattering ~~dot-patterns~~ dots have a same size.

Claim 8 (currently amended): The planar surface illuminator as described in claim 6, wherein a size distribution of scattering ~~dot-patterns~~ dots in each group of at least three scattering ~~dot-patterns~~ dots is complementary with an optical energy distribution of a ~~Gauss~~ Gaussian beam of the corresponding one point light source.

Claim 9 (currently amended): The planar surface illuminator as described in claim 8, wherein among the group of at least three scattering ~~dot-patterns~~ dots, the nearer a given scattering ~~dot-pattern~~ dot is to its corresponding one point light source, the smaller ~~will be~~ the size of the scattering ~~dot-pattern~~ dot.

Claim 10 (currently amended): The planar surface illuminator as described in claim 1, wherein the scattering ~~dot-patterns~~ dots are injection molded on the optical input surface.

Claim 11 (currently amended): The planar surface illuminator as described in claim 1, wherein the scattering ~~dot-patterns~~ dots are printed on the optical input surface.

Claim 12 (currently amended): The planar surface illuminator as described in claim 1, wherein the scattering ~~dot-patterns~~ dots adhere to the optical input surface.

Claim 13 (original): The planar surface illuminator as described in claim 1, wherein the point light sources are light emitting diodes.

Claim 14 (original): The planar surface illuminator as described in claim 1, further

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comprising a reflective film coated on a bottom surface of the light guide plate.

Claim 15 (currently amended): The planar surface illuminator as described in claim 1, ~~wherein~~ further comprising a reflective sheet covering a bottom surface of the light guide plate.

Claim 16 (currently amended): The planar surface illuminator as described in claim 1, wherein the light guide plate is substantially shaped as a rectangular plane ~~plate sheet~~, and further comprises an optical output surface, a bottom surface, first and second side surfaces, and a third side surface opposite to the optical input surface, the bottom surface having a plurality of reflective ~~dot patterns~~ dots thereon.

Claim 17 (currently amended): The planar surface illuminator as described in claim 16, wherein the reflective ~~dot patterns~~ dots are uniformly spaced on the bottom surface.

Claim 18 (original): The planar surface illuminator as described in claim 1, wherein the optical light guide plate is substantially shaped as a wedge.

Claim 19 (currently amended): A planar surface illuminator for use beneath ~~below~~ a liquid crystal display panel, comprising:

a light guide plate comprising an optical input surface;

a plurality of point light sources positioned beside ~~said~~ the optical input surface; and

a number of scattering structures positioned around the optical input surface and essentially between the point light sources and a center of ~~said~~ the light guide plate; wherein each of ~~said~~ the point light sources is equipped with more than one of said scattering structures for converting Gauss Gaussian beams emitted by ~~from said~~ each of the point light sources to light beams having a uniform light intensity across corresponding widths thereof, for transmitting through the optical input surface into the light guide plate.

Claim 20 (canceled)